RENESAS TECHNICAL UPDATE

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Product Category	MPU/MCU		Document No.	TN-RX*-A098A/E	Rev.	1.00
Title	Notes on using the general PWM timer (GPT)		Information Category	Technical Notification		
Applicable Product	RX62T Group, RX62G Group RX63T Group	Lot No.	Reference Document	RX62T Group, RX62G Group User's Manual: Hardware Rev.2.00 (R01UH0034EJ0200) RX63T Group User's Manual: Hardware Rev.2.10 (R01UH0238EJ0210)		
		All lots				

We have identified some restrictions on usage of the general PWM timer (GPT) in saw-wave operation. The following describes the usage limitations and the corrections in the manual.

■Usage Limitations

1)   Do not use input capture as the trigger for synchronized clearing in synchronized operation. If a PWM waveform is being output in synchronized operation, using input capture as the trigger for clearing may lead to the PWM output not being as intended. This will depend on the timing of the generation of input capture.

2)   Do not change the GTPR register settings when using down-counting to obtain saw-wave operation. Moreover, do not use buffered operation to change the GTPR register. If this is done, the peripheral settings may become other than as intended.

■Corrections in the Manual

1)   The description of the CCLR[1:0] bits (Counter Clear Source Select) in the general PWM timer control register (GTCR) has been changed as follows.

[Before change]

These bits select the clearing source for GTCNT.

In saw-wave mode, when synchronized clearing is selected, synchronized clearing is handled equally to clearing by the counter's overflow or underflow and the pin output and buffer transfer are performed. However, the overflow flag and underflow flag are not set.

In triangle-wave mode, when synchronized clearing is selected, only counter clearing is performed. Though the counter value becomes 0, it is not handled as a trough.

Once 01b, 10b, or 11b is selected as a counter clear source, counter clearing by the source is executed whether the GPTn.GTCNT count operation is performed (GTSTR.CSTn = 1; n = 0 to 3) or stopped (GTSTR.CSTn = 0, n = 0 to 3).

[After change]

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Once 01b, 10b, or 11b is selected as a counter clear source, counter clearing by the source is executed whether the GPTn.GTCNT count operation is performed (GTSTR.CSTn = 1; n = 0 to 3) or stopped (GTSTR.CSTn = 0, n = 0 to 3).

When synchronized clearing is in use, the CCLR[1:0] bits of the target channel should not be set to 01b or 10b.

2)   The description of the PR[1:0] bits (GTPR Buffer Operation) in the general PWM timer buffer enable register (GTBER) has been changed as follows.

[Before change]

These bits set buffer operation with GTPR, GTPBR, and GTPDBR combined.

[After change]

These bits set buffer operation with GTPR, GTPBR, and GTPDBR combined.

When using down-counting in saw-wave operation, set the PR[1:0] bits to 00b.

3)   The description of the general PWM timer cycle setting register (GTPR) has been changed as follows.

[Before change]

GTPR is a 16-bit readable/writable register that sets the maximum count value of GTCNT. There is one GTPR counter for each channel.

For saw waves, the value of (GTPR x 1) is the cycle. For triangle waves, the value of (GTPR value x 2) is the cycle.

[After change]

GTPR is a 16-bit readable/writable register that sets the maximum count value of GTCNT. There is one GTPR counter for each channel.

For saw waves, the value of (GTPR x 1) is the cycle. For triangle waves, the value of (GTPR value x 2) is the cycle.

Do not change GTPR when using down-counting in saw-wave operation.

4)   The description of the GTPR register buffer operation has been changed as follows.

[Before change]

GTPBR can function as a buffer register for GTPR, and GTPCBR can function as a buffer register for GTPBR (double-buffer register for GTPR).

The buffer transfer is performed at an overflow (during up-count operation) or an underflow (during down-count operation) in saw-wave mode, and at a trough in triangle-wave mode.

[After change]

GTPBR can function as a buffer register for GTPR, and GTPCBR can function as a buffer register for GTPBR (double-buffer register for GTPR). Setting of buffered operation is prohibited when down-counting is used in saw-wave generation.

The buffer transfer is performed on an overflow or counter clearing in saw-wave mode, and at the troughs in triangle-wave mode.

5)   The figure titled "Example of GTPR Buffer Operation (Down-Counting in Saw-Wave Operation)" is to be deleted.

[Related manuals]

Series	Group	No.	Number of Page, Figure, and Table	
RX600	RX62T, RX62G	1)	18.2.19 General PWM Timer Control Register (GTCR)	Page 767 of 1489
		2)	18.2.20 General PWM Timer Buffer Enable Register (GTBER)	Page 769 of 1489
		3)	18.2.26 General PWM Timer Cycle Setting Register (GTPR)	Page 777 of 1489
		4)	First and second paragraphs in 18.3.2.1 GTPR Register Buffer Operation	Page 800 of 1489
		5)	Figure 18.14 Example of GTPR Buffer Operation (Saw Waves in Down-Count Operation)	Page 801 of 1489
	RX63T	1)	24.2.19 General PWM Timer Control Register (GTCR)	Page 872 of 1851
		2)	24.2.20 General PWM Timer Buffer Enable Register (GTBER)	Page 875 of 1851
		3)	24.2.26 General PWM Timer Cycle Setting Register (GTPR)	Page 883 of 1851
		4)	First and second paragraphs in 24.3.2.1 GTPR Register Buffer Operation	Page 908 of 1851
		5)	Figure 24.14 Example of GTPR Buffer Operation (Saw Waves in Down-Count Operation)	Page 909 of 1851

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